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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/640,802

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Tai Anh Cao

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02/23/2004

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EXAMINER

WANG, TED M

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 02/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,802

Applicant(s)

CAO ET AL.

Examiner

Ted M Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/17/2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-17 are pending in the application.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show element 618 in Fig. 6 as described in the specification (page 16 line 9). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because

- Fig.2 and Fig.4, "V2 0.532v" should be changed to "V2 0.5325v", and
- Fig.4, "V1" should be added next to 1.25v terminal.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:
 - Page 4 line 20, "... and second digital" should be changed to "... and third digital",
 - Page 18 equations 1 and 2, " $(R_a/R_b)/((R_a/R_b) + R_c)$ " should be changed to " $(R_a//R_b)/((R_a//R_b) + R_c)$ ", and

- Page 18 equation 3, " $(R_a R_b / (R_a + R_b)) / (R_a R_b / (R_a + R_b)) + R_c = 1/7$ " should be changed to " $(R_a R_b / (R_a + R_b)) / ((R_a R_b / (R_a + R_b)) + R_c) = 1/7$ "
- Page 18 equation 5, " $(R_a / R_c) / ((R_a / R_c) + R_b) \times 2.5 \text{ volts} = 0.71 \text{ volts}$ " should be changed to " $(R_a // R_c) / ((R_a // R_c) + R_b) \times 2.5 \text{ volts} = 0.71 \text{ volts}$ ", and
- Page 18 equation 7, " $R_a / ((R_b / R_c) + R_a) \times 2.5 \text{ volts} = 1.06 \text{ volts}$ " should be changed to " $R_a / ((R_b // R_c) + R_a) \times 2.5 \text{ volts} = 1.06 \text{ volts}$ ".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1-3, 7, 9, 13, and 14 rejected under 35 U.S.C. 102(b) as being anticipated by Blood (PT3,993,867).

□ In regard claim 1, Blood discloses a signal transmission and reception device for new wiring system to communicate a signal to a plurality of additional electronic circuits over a common transmission line while simultaneously receiving additional signals from the plurality of additional electronic circuits over the common transmission line (Fig.5 and Abstract lines 1-17 and column 6 line 44 – column 7 line 8), the electronic circuit including: (a) signal sending circuitry coupled to an interface node which is adapted to be coupled to the common

transmission line (Fig.2 elements S1 and 11, and column 2 line 57 – column 3 line 50), the signal sending circuitry for applying a signal from the electronic circuit to cooperate in creating a combined signal at the interface node (Fig.2 and column 2 line 57 – column 3 line 50), the combined signal being dependent upon the signal from the electronic circuit and the additional signals simultaneously applied by the plurality of additional electronic circuits connected at other points on the common transmission line (Fig.2 and 5, and column 2 line 57 – column 3 line 50, and column 6 line 44 – column 7 line 8); and (b) decoding circuitry coupled to the interface node (Fig.2 elements S2 and DA, and Fig.4, and column 4 line 53 – column 6 line 43), the decoding circuitry for detecting the combined signal at the interface node and decoding the additional signals from the combined signal (Fig.2 –5, and column 2 line 57 – column 3 line 60, and column 4 line 53 – column 6 line 43, and column 6 line 44 – column 7 line 8).

- In regard claim 2, the limitation that the signal sending circuitry includes: (a) a signal driver (Fig.2 element DA); and (b) an encoding element connected between the signal driver and the interface node (Fig.2 element 11) can further be taught in Fig.2 elements DA and 11 and column 2 line 57 – column 3 line 60.
- In regard claim 3, the limitation that the encoding element comprises a resistor can further be taught in Fig. 4 element 12.
- In regard claim 7, which is an electronic circuit arrangement claim related to claim 1, the limitation of a three or more circuits connected together by a common transmission line, each circuit adapted to assert a respective digital

signal can further be taught in Fig. 5 elements A-N and column 6 line 44 – column 7 line 8, and encoded signal comprising one signal from a set of unique encoded signals with each different signal in the set being representative of a particular combination of the first, second, and third digital signals can further be taught in Fig. 2, 3, and 5, and column 3 lines 19-60. All other limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

- In regard claim 9, which is an electronic circuit arrangement claim related to claim 3, all limitation is contained in claim 3 and 7. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 13, which is a system claim related to claim 7, all limitation is contained in claim 7. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 14, which is an electronic circuit arrangement claim related to claim 3, all limitation is contained in claim 3 and 14. The explanation of all the limitation is already addressed in the above paragraph.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4-6, 8, 10, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blood (PT3,993,867) in view of Cao et al. (PT5,761,246).

- In regard claim 4, Blood discloses all of the limitation as described in the above paragraph except specifically teaching that the decoding circuitry includes: (a) a first differential receiver having a positive input connected to receive the combined signal and having an negative input connected to a first reference voltage source.

Cao et al. (IDS provided by the instant application) discloses a circuit for multiplexing a plurality of signals on one transmission line between chips having the decoding circuitry that includes: (a) a first differential receiver having a positive input connected to receive the combined signal and having an negative input connected to a first reference voltage source (Fig.1 element 102) in order to allows for the simultaneous transmission of three digital signals from one integrated circuit to another.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Blood's device circuit in view of Cao's disclosure in order to allows for the simultaneous transmission of three digital signals from one integrated circuit to another.

- In regard claim 5, the limitation of (a) a reference voltage multiplexer connected to receive a first digital signal as a control signal, and having second and third reference voltage inputs; (b) a second differential receiver having a positive input

connected to receive the combined signal, and an negative input connected to receive an output of the reference voltage multiplexer can further be taught by Cao et al. in Fig.1 element 102, 105, 106, and RECEIVER A-C, and column 3 line 1 – column 4 line 34 in order to allows for the simultaneous transmission of three digital signals from one integrated circuit to another.

- In regard claim 6, the limitation of (a) an additional reference multiplexer connected to be controlled by a first digital signal and a second digital signal and having fourth, fifth, sixth, and seventh reference voltage inputs; and (b) a third differential receiver having a positive input connected to receive the combined signal and an negative input connected to receive an output from the additional reference voltage multiplexer can further be taught by Cao et al. in column 2 lines 1 – 23, where N is a positive integer.
- In regard claim 8, Blood discloses a signal transmission and reception device for new wiring system to communicate a signal having the common transmission line connected to each separate signal transmission and reception device (Fig.5 and column 6 line 44 – column 7 line 8) except specifically teaching that each circuit is located on a separate integrated circuit chip and the transmission line comprises a conductor connected to a single electrode on each separate integrated circuit chip.

Cao et al. discloses a circuit for multiplexing a plurality of signals on one transmission line between chips that each circuit is located on a separate integrated circuit chip (Fog. 1 elements 101 and 102, Fig.2, and column 3 line 1 –

column 5 line 26) and the transmission line comprises a conductor connected to a single electrode on each separate integrated circuit chip (column 3 lines 39-45) in order to facilitate the connectivity between the individual chip and transmission line.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Blood's device circuit in view of Cao's disclosure in order to facilitate the connectivity between the individual chip and transmission line.

- In regard claim 10, which is an electronic circuit arrangement claim related to claim 4, all limitation is contained in claim 4 and 7. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 11, which is an electronic circuit arrangement claim related to claim 5, all limitation is contained in claim 5 and 7. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 15, which is an electronic circuit arrangement claim related to claims 11 and 12, all limitation is contained in claims 11-13. The explanation of all the limitation is already addressed in the above paragraph.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

- The disclosed specification does not teach recited claim 17-- "a first differential receiver having a positive **output** connected to receive the encoded signal and a negative **output** connected to receive a first reference voltage signal".

The disclosed specification teaches -- "a first differential receiver having a positive **input** connected to receive the encoded signal and a negative **input** connected to receive a first reference voltage signal".

Allowable Subject Matter

11. Claims 12 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Reference 5,541,535, 6,226,330, and 6,504,875 are cited because they are put pertinent to the bi-directional driver and receiver for multilevel signal. However, none of references teach detailed connection as recited in claim.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (703) 305-0373. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang


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